ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
1994 STATEWIDE WATER QUALITY ASSESSMENT

NAME OF WATERBODY: Crow Creek

Location or Lat/Long: SW 1/4 NW 1/4 Sec 16, T11N, R2E, Seward Meridian. 8 miles from Girdwood near headwaters of Crow Creek

Is the waterbody in a national or state park, monument, refuge, preserve, or similar area?:
[X] Yes / [ ] No / Name: Chugach National Forest

Waterbody Type:	Waterbody Size:	Segment of Waterbody Addressed:
[X] River/Stream	____ Miles	From:
[ ] Lake	____ Acres	To:
[ ] Fresh Wetland	____ Acres	Other Description:
[ ] Tidal Wetland	____ Acres	
[ ] Estuary	____ Square Miles	Size of Segment:
[ ] Coastal Shoreline	____ Miles	
[ ] Groundwater		

Period of Assessment, From: July 18, 1990 **To:** August 31, 1990

Assessment completed by: Chris Roe, Bureau of Mines and Carol Huber, Forest Service

Type of Documentation (attach if possible):

- [ ] Water quality data
- [ ] Documented oil spill
- [ ] NOV / Enforcement action
- [X] Photos with documentation
- [ ] Fish / Habitat survey
- [X] Written report
- [X] Field notes
- [ ] Overflight
- [X] Observation
- [X] Other (please describe below)

Assessment based on: [ ] Monitored water quality data [X] Evaluated (Best professional judgement)

Describe Source and Nature of Pollution, Documentation Provided and Other Comments: Abandoned Mine Inventory Brenner Mine workings and Millsite. Pollutants: Tiny beads of mercury can be seen in mill tailings on streambank. Two shafts 3-5 ft above stream, are dewatering into the stream, may be carrying heavy metals. Mine adjacent to the popular Crow Pass hiking trail. Sample results are attached.

RESPONDENT INFORMATION:

Name: Carol S Huber **Phone:** 271-2541 **Date:** 3-15-94
Employer: USDA Forest Service **Dept:** Minerals/Soils/Water **Title:** Forest Geologist
Address: 3301 C St Ste 300, Anchorage, AK 99503
Education/Experience: BS Geology / Water Quality Study / Abandoned Mine Inventory

TYPES OF POLLUTANTS (Please indicate relative severity; H= High, M= Medium, S= Slight):

___ Cause unknown
___ Unknown toxicity
___ Pesticides: _____
___ Priority organics: _____
___ Nonpriority organics: _____
H Metals: Hg

___ Ammonia
___ Chlorine
___ Other inorganics
___ Nutrients
S pH
___ Siltation/sedimentation
___ Low dissolved oxygen
___ TDS/Salinity/Chlorides

___ Temperature modifications
___ Flow alterations
___ Other habitat alterations
___ Pathogens
___ Radiation
S Oil and Grease
___ Taste and odor
___ Suspended solids

___ Noxious aquatic plants
___ Filling and draining
___ Total toxics
___ Turbidity
___ Exotic species
___ Debris, foam, scum, etc.
___ Insufficient stream structure
S Arsenic

Other: _____

SOURCES OF POLLUTANTS (Please indicate relative severity; H= High, M= Medium, S= Slight):

Point Sources:
___ Industrial
___ Municipal

Urban Runoff:
___ Storm sewers
___ Combined sewers
___ Surface runoff

Agriculture:
___ Non-irrigated crop production
___ Irrigated crop production
___ Pasture land
___ Range land
___ Feedlots
___ Aquaculture
___ Animal waste/holding areas
___ Manure lagoons

Silviculture:
___ Timber harvest
___ Stream restoration projects
___ Road construction/maintenance
___ Elimination of stream thermal cover
___ Log Transfer Facilities (estuary)
___ Log Sort Yard (land)

Construction:
___ Highway/road
___ Bridge construction/repair
___ Land development

Resource Exploration/extraction:
___ Surface mining
M Subsurface mining
___ Placer mining
___ Dredge mining
___ Petroleum activities
M Mill tailings
S Mine tailings
___ Gravel mining
___ Injection wells

Waste Disposal:
___ Sludge
___ Wastewater
___ Landfills Industrial land treatment
___ Onsite wastewater systems
___ Hazardous waste
___ Sewage disposal
___ Septic tank leak

Hydrologic Modification:
___ Stream channelization
___ Dredging
___ Dam construction
___ Flow regulation/modification
___ Bridge construction
___ Removal of riparian vegetation
___ Streambank modification/destabilization
___ Draining/filling of wetlands

Marinas:
___ Small boat harbors (up to 10 slips)
___ Harbors (recreational/commercial)
___ Loading facilities (commercial)

Other:
___ Atmospheric deposition
___ Waste storage tank leaks
___ Highway maintenance/runoff
S Petroleum/chemical spills, leaks
___ In-place containments
___ Natural sources
___ Recreational activities
___ Upstream impoundment
___ Salt storage sites
___ Fire damage/restoration
___ Underground storage tanks
___ Aboveground storage tanks
___ Saltwater intrusion
___ Road salting
___ Fish, shellfish wastes
___ UNKNOWN SOURCE

END

their way to or from Eagle River, 26 miles away. A few were hunters looking for game. Many people visit this area thus, its hazards should be given high priority for remediation. See figure 2.

B. PHYSICAL HAZARDS

1. Shafts, pits, trenches;

The portal of the inclined shaft was found next to and 2 feet above the creek. The shaft is flooded up to the portal. The original dimensions were about 5 feet high by 5 feet wide, but soil and debris have sloughed down from above and partially blocked the portal. It appears that a few of the mine timbers are holding up this debris. If this is the case, the timbers could collapse if someone happened to stand on the debris, causing them to fall into the flooded shaft. This is a dangerous situation. Also, the shaft appears to be supported by closely spaced timbers along its length, indicating that the material around it is not very stable. This would be dangerous for anyone attempting to descend into the shaft, because after being underwater for at least 50 years, the timbers are probably rotten and could possibly fail at any time. See figure 3.

2. Adits and underground workings;

The adit is on the east side of the creek several hundred feet south of the shaft and mill site. The portal is 3 feet wide by 3 feet high and partially flooded. An iron pipe at the portal was discharging water at a rate of approximately 1 gallon per minute. Further investigation of this adit was not done because of its small size. The reported adit on the west side of the creek was not located. More than likely, it has caved in since it was last used.

3. Highwalls;

No man-made highwalls are present at the mine, however, the topography of the area is very steep and in places almost vertical.

4. Impoundments;

No impoundments are at the site.

Brenner

5. Unexpended explosives;

We found no abandoned explosives at the site.

6. Buildings, equipment;

No buildings remain at the site, however, many pieces of equipment are present, especially in the creek by the mill site. These include a jaw crusher, flat belt pulleys and axles, two pneumatic drills, steel cable, and pieces of scrap metal. See figure 4.

7. Unstable tailings piles or ditches;

No unstable tailings piles are at this site.

8. Timber, ladders;

The inclined shaft contains many timber supports. Practically all of this timber is under water and rotten. The timbers appear to be holding up debris that has fallen into the entrance of the shaft. As this wood rots and loses its strength, it will allow the debris and anyone standing on it to fall into the flooded shaft.

9. Mine gases;

The open adit was not entered because it was so small and wet.The air quality was not checked.

10. Miscellaneous physical hazards;

None.

C. ENVIRONMENTAL HAZARDS

1. Mercury, arsenic, cyanide;

a. Soil

Close examination of the soil at the mill site showed several tiny beads of mercury. One soil sample was collected from the area 2 feet below the ledge where mill had been located. The result of the laboratory analysis is as follows;

Element	Concentration (parts per million)
Mercury	25.01

CHEMICAL & GEOLOGICAL LABORATORIES OF ALASKA, INC.

5633 B STREET • ANCHORAGE, ALASKA 99518 • TELEPHONE (907) 562-2343

FEDERAL TAX I.D. #92-0040440

ANALYSIS REPORT BY SAMPLE for Work Order # 29056
Date Report Printed: OCT 29 90 @ 19:19

Brenner Mine

Client Sample ID:ANC MH 3305
PWSID :UA
Collected @ hrs.
Received OCT 3 90 @ 15:30 hrs.
Preserved with :AS REQUIRED

Analysis Completed :OCT 10 90
Laboratory Supervisor :STEPHEN C. EDE
Released By : Steph C. Ede

Client Name : US FOREST SRV *ANCHORAGE
Client Acct : USFRSTP
P.O.# NONE RECEIVED
Req #
Ordered By : CAROL HUBER

Send Reports to:
1)US FOREST SRV *ANCHORAGE
2)

Special
Instruct:

Chemlab Ref #: 904046 Lab Smpl ID: 5 Matrix: SOIL

Parameter Tested	Result	Units	Method	Allowable Limits
MERCURY	25.01	mg/kg	AA	

Sample
Remarks:

1 Tests Performed
ND= None Detected
NA= Not Analyzed
* See Special Instructions Above
** See Sample Remarks Above
LT=Less Than, GT=Greater Than
UA=Unavailable

This is not as high as one would expect when native mercury is visible in the sample. This may be due to the sampling method used at the laboratory when doing the analysis. Normally, the laboratory technician will thoroughly mix a soil sample and take 2 grams for the actual analysis. Elemental mercury will not disperse evenly through a sample. Thus, a much larger sample of the soil must be analyzed, to increase the probability of analyzing soil which has elemental mercury in it.

The concentration of 25.01 parts per million plus the presence of elemental mercury, however, indicate that very anomalous amounts of mercury are present and should be mitigated.

b. Water

Three water samples were collected from Crow Creek, as follows:

1) Sample 1- 100 feet upstream from the mill site,

2) Sample 2- next to the mill site, and

3) Sample 3- 100 feet downstream from the mill site. See figure 2.

The results are as follows;

Sample	Element	Concentration (parts per million)
1	Arsenic	<0.08
2	Arsenic	<0.08
3	Arsenic	<0.08
1	Mercury	<0.02
2	Mercury	<0.02
3	Mercury	<0.02

These results indicate that the concentrations of arsenic and mercury are very low and do not change at all when passing by the mill site.

2. Acid forming materials;

A pipe at the portal of the adit is discharging water but there was no visible evidence of acid drainage in the area.

3. Heavy metals;

No evidence of heavy metals was found except arsenic and mercury which are discussed above.

4. Asbestos;

There is no indication of asbestos in the area.

5. Radioactive materials;

The underground workings were not tested for radon.

6. Sedimentation;

No sedimentation has occurred at the site.

7. Miscellaneous environmental hazards;

None.

D. RECOMMENDATIONS

As a result of the investigation at the Brenner Mine, the following are recommended;

1. Warning signs could be displayed around the property to advise the public about the dangerous conditions which are present, especially the inclined shaft.

2. A chain link fence could be installed around the inclined shaft as a temporary means of keeping people away from this hazard until a permanent closure is completed.

3. Permanent closure of these mine openings could be considered because they are very hazardous, they will be very expensive to reopen, and there is no known claimant for this property. The openings could be closed by blasting them shut or by backfilling them with earth.

4. The smaller pieces of scrap lumber could be disposed of by burning or burying. The scrap metal could be buried or recycled. The large pieces of equipment, such as the crusher and pneumatic drills could be put on display and stabilized so as not to be a toppling or falling hazard.

5. Further soil sampling could be done to determine the extent of mercury occurrence in the soil in the mill site. If native mercury is in the soil at the mill site, it is very likely to be in the adjacent creek, too. At least 10 soil or sediment samples should be collected around the mill site and in the

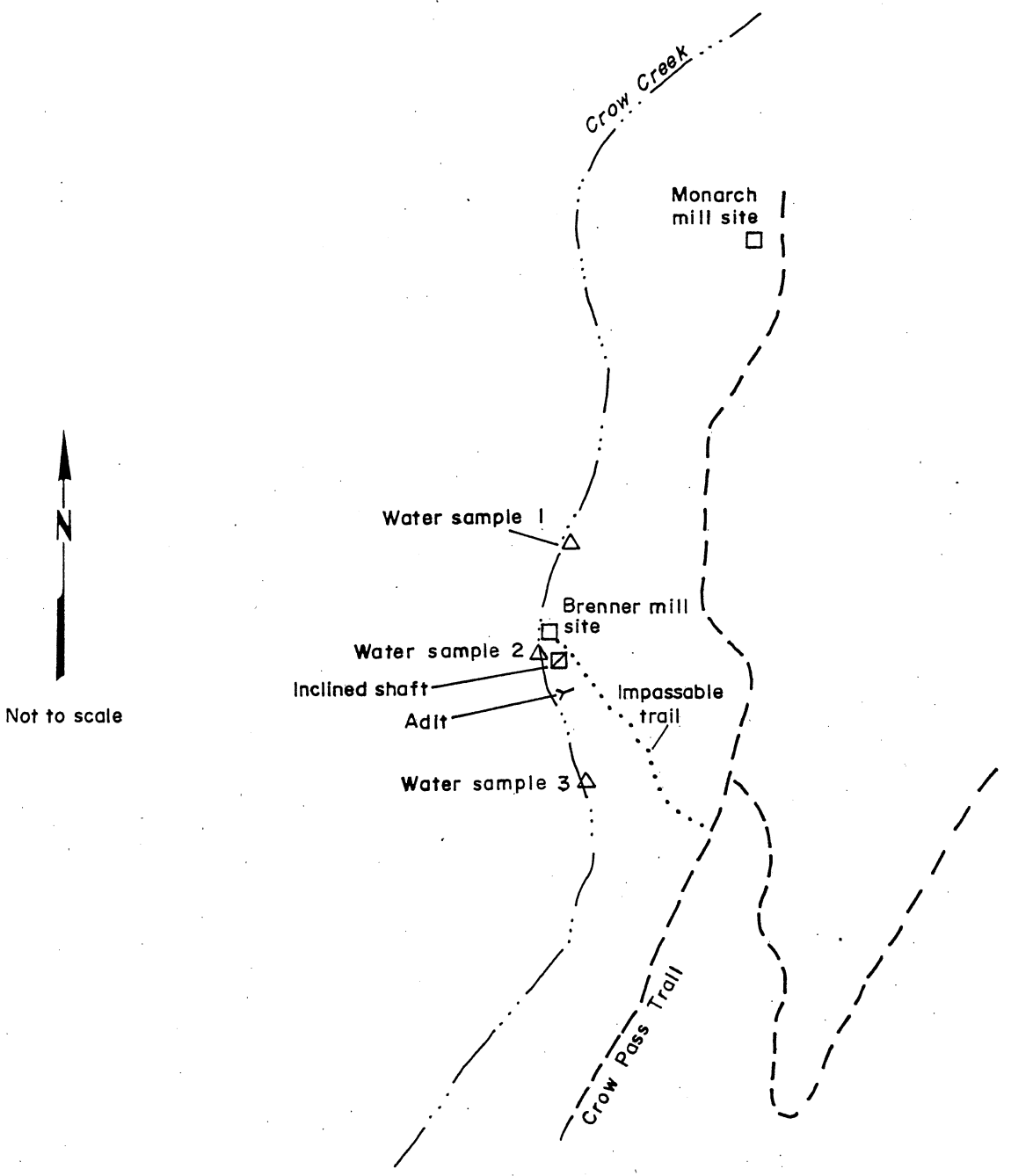

Figure 2.- Sketch map showing the main features of the Brenner Mine area and the locations of the water samples.

204601-603

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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Is the waterbody in a national or state park, monument, refuge, preserve, or similar area?:
[X] Yes / [ ] No / Name: Chugach National Forest

Waterbody Type:	Waterbody Size:	Segment of Waterbody Addressed:
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Describe Source and Nature of Pollution, Documentation Provided and Other Comments: Abandoned Mine Inventory Monarch Mine (& Jewell Mine) mill has contributed uncontained tailings (high levels Arsenic, lead and mercury) subject to erosion into Crow Creek. Sample data attached. Tailings are free of vegetation, even after some 50 years.

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H Arsenic

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___ Fire damage/restoration
___ Underground storage tanks
___ Aboveground storage tanks
___ Saltwater intrusion
___ Road salting
___ Fish, shellfish wastes
___ UNKNOWN SOURCE

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